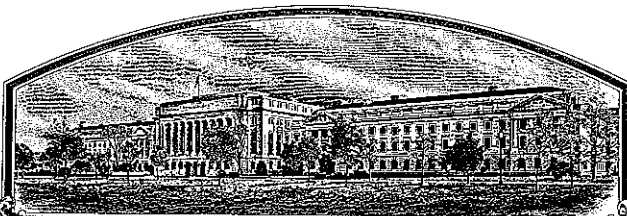


No.

9700396



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

South Carolina Agriculture and Forestry Research System

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT, IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE IDENTIFIED BY THE VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENES SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Musen'

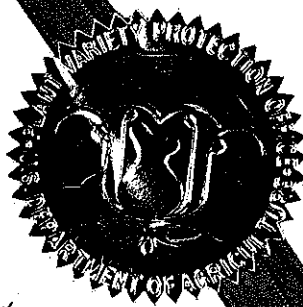
In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of July in the year of our Lord one thousand nine hundred and ninety-nine.

Attest:

Ann Marie

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

John G. Dickinson
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

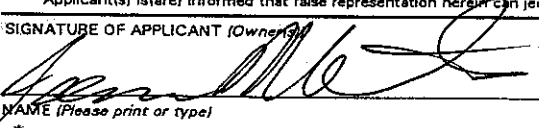
1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
South Carolina Agriculture and Forestry Research System		SC89-181	Musen
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		5. TELEPHONE (include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER 9700396 DATE Sept 10, 1997 FILING AND EXAMINATION FEE \$450 DATE Sept. 1997 CERTIFICATION FEE 300.00 DATE June 18, 1999
104 Barre Hall Clemson University Clemson, SC 29634-0351		864-656-3140	
6. FAX (include area code)			
864-656-3779			
7. GENUS AND SPECIES NAME	8. FAMILY NAME (Botanical)		
Glycine max	Leguminosae		
9. CROP KIND NAME (Common name)			
Soybean			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)			
State Agricultural Experiment Station			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS			14. TELEPHONE (include area code)
G. Michael Watkins S. C. Foundation Seed Association 1162 Cherry Road, Clemson University Clemson, SC 29634-9952			864-656-2520
			15. FAX (include area code)
			864-656-1320
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act?)			
<input checked="" type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?			
<input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) <input type="checkbox"/> NO			
Released by the S. C. Agriculture and Forestry Research System, March 1997			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.			
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner)		SIGNATURE OF APPLICANT (Owner(s))	
			
NAME (Please print or type)		NAME (Please print or type)	
James R. Fischer			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Director, S. C. Agric. & Forestry Res. System	8-29-97		1

EXHIBIT A

SOUTH CAROLINA AGRICULTURE AND FORESTRY RESEARCH SYSTEM

SC89-181 MUSEN SOYBEAN

SOYBEAN

'MUSEN'

16A. Origin and Breeding History of the Variety

Pedigree: HUTCHESON X LEFLOREParentage of **HUTCHESON** is V68-1034 X Essex

Parentage of V68-1034 is York X PI 71.506

Parentage of **LEFLORE** is Centennial x J74-47

Parentage of J74-47 is Forrest(2) x (D68-18 x PI 88788)

Parentage of D68-18 is Dyer x Bragg (See Appendix I)

Musen is derived from a F_4 plant from a cross made at Clemson, S.C., in 1986. Generations were advanced to the F_4 by the single-seed descent (pod-bulk) breeding method. The strain was composited in the F_5 generation in 1989 and designated SC89-181. From 1990 to 1991, Musen was tested as SC89-181 for nematode resistance, agronomic performance and seed yield in South Carolina. SC89-181 has been evaluated in South Carolina Variety Trials (1992 to present) and USDA Southern Regional Soybean Tests from 1992 to 1995.

Seed from 130 F_8 plants were grown in plant rows (F_9) in 1994. Rows were evaluated for uniform agronomic traits and 119 rows were bulked (Winter, 1994-95). Breeder seed was increased in 1995 and Foundation Seed grown in 1996. Musen appears stable and uniform within commercially acceptable limits during seed increase since 1994. No genetic variants have been observed. The buff hila color may vary in intensity based on varying environmental conditions.

EXHIBIT B

SOUTH CAROLINA AGRICULTURE AND FORESTRY RESEARCH SYSTEM

SC89-181 MUSEN SOYBEAN

16B. Statement of Distinctness


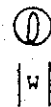

To our knowledge, Musen most closely resembles Brim. Both cultivars have white flowers and gray pubescence. Brim has brown pod walls. Musen differs from Brim in having tan pod walls, being resistant to soybean cyst nematode, Races 3 and 14 (Appendix II), and stem canker disease (Appendix II), and being an average of 5 days later in maturity (Appendix III).

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) South Carolina Agriculture and Forestry Research System	TEMPORARY DESIGNATION SC89-181	VARIETY NAME Musen
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 104 Barre Hall Clemson University Clemson, SC 29634-0351		FOR OFFICIAL USE ONLY PVPO NUMBER 9700396

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

<input type="text" value="2"/>			
	1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)		2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
	3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)		4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

<input type="text" value="1"/>	1 = Yellow	2 = Green	3 = Brown	4 = Black	5 = Other (Specify) _____
--------------------------------	------------	-----------	-----------	-----------	---------------------------

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

<input type="text" value="1"/>	1 = Dull ('Corsoy 79'; 'Braxton')	2 = Shiny ('Nebsoy'; 'Gasoy 17')
--------------------------------	-----------------------------------	----------------------------------

★ 4. SEED SIZE: (Mature Seed)

<input type="text" value="1"/> <input type="text" value="2"/>	Grams per 100 seeds
---	---------------------

★ 5. HILUM COLOR: (Mature Seed)

<input type="text" value="1"/>	1 = Buff	2 = Yellow	3 = Brown	4 = Gray	5 = Imperfect Black	6 = Black	7 = Other (Specify) _____
--------------------------------	----------	------------	-----------	----------	---------------------	-----------	---------------------------

★ 6. COTYLEDON COLOR: (Mature Seed)

<input type="text" value="1"/>	1 = Yellow	2 = Green
--------------------------------	------------	-----------

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

<input type="text" value="1"/>	1 = Low	2 = High
--------------------------------	---------	----------

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

<input type="checkbox"/>	1 = Type A (SP1 ^a)	2 = Type B (SP1 ^b)
--------------------------	--------------------------------	--------------------------------

★ 9. HYPOCOTYL COLOR:

<input type="text" value="1"/>	1 = Green only ('Evans'; 'Davis')	2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
	3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')	
	4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')	

★ 10. LEAFLET SHAPE:

<input type="text" value="2"/>	1 = Lanceolate	2 = Oval	3 = Ovate	4 = Other (Specify) _____
--------------------------------	----------------	----------	-----------	---------------------------

11. LEAFLET SIZE:

☐ 21 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

9700396

12. LEAF COLOR:

☐ 31 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

★ 13. FLOWER COLOR:

☐ 1

1 = White

2 = Purple

3 = White with purple throat

★ 14. POD COLOR:

☐ 1

1 = Tan

2 = Brown

3 = Black.

★ 15. PLANT PUBESCENCE COLOR:

☐ 1

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☐ 21 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

★ 17. PLANT HABIT:

☐ 1

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ 18. MATURITY GROUP:

☐ 0 ☐ 9

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★

☐ 2Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★

☐ 0Bacterial Blight (*Pseudomonas glycinea*)

★

☐ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★

☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojae*)

★

☐ 1

Race 1

☐ 1

Race 2

☐ 1

Race 3

☐ 1

Race 4

☐ 1

Race 5

☐

Other (Specify)

☐ 0Target Spot (*Corynespora cassiicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 0Powdery Mildew (*Microsphaera diffusa*)

★

☐ 0Brown Stem Rot (*Cephalosporium gregatum*)☐ 2Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

- ★ ☐ 0 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☐ 0 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☐ 0 Race 1 ☐ 0 Race 2 ☐ 0 Race 3 ☐ 0 Race 4 ☐ 0 Race 5 ☐ 0 Race 6 ☐ 0 Race 7
- ☐ 0 Race 8 ☐ 0 Race 9 ☐ Other (Specify) _____

VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 0 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 0 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 0 Race 1 ☐ 0 Race 2 ☐ 2 Race 3 ☐ 0 Race 4 ☐ 2 Other (Specify) Race 14
- ☐ 0 Lance Nematode (*Hoplolaimus Colombus*)
- ★ ☐ 2 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 1 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 1 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 0 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 0 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Brim	Seed Coat Luster	Hutcheson
Leaf Shape	Brim	Seed Size	Brim
Leaf Color	Brim	Seed Shape	Dillon
Leaf Size	Brim	Seedling Pigmentation	Brim
6			

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

9700396

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT *		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
Submitted Musen	155	2.0	84	-	-	41.1	20.1	12	2-3
Name of Similar Variety Brim	150	1.9	89	-	-	42.7	20.2	13	2-3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.J. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTi-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

* NOTE: % protein and % oil expressed on dry weight basis.

pedigree info
9700396

U. S. REGIONAL SOYBEAN LABORATORY
URBANA, ILLINOIS

THE UNIFORM SOYBEAN TESTS SOUTHERN STATES

1970

RSLM 247

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
COOPERATING WITH
STATE AGRICULTURAL EXPERIMENT STATIONS

"THIS IS A PROGRESS REPORT OF COOPERATIVE INVESTIGATIONS CONTAINING DATA THE INTERPRETATION OF WHICH MAY BE MODIFIED WITH ADDITIONAL EXPERIMENTATION. THEREFORE, PUBLICATION, DISPLAY, OR DISTRIBUTION OF ANY DATA OR ANY STATEMENTS HEREIN SHOULD NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE CROPS RESEARCH DIVISION, A.R.S., U. S. DEPT. AGR., AND THE COOPERATING AGENCY OR AGENCIES CONCERNED."

THE UNIFORM SOYBEAN TESTS

SOUTHERN STATES

1970

9700396

RSLM 247

Compiled by:

Edgar E. Hartwig and Kathryn W. Jamison

From data supplied by:

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R. L. Smith, Jay, Fla.	J. P. Craigmiles, Beaumont, Texas
W. W. Kilby, Poplarville, Miss.	

TABLE OF CONTENTS

	<u>Page</u>
Cooperating Personnel - - - - -	2
Introduction - - - - -	4
Location of Nurseries - - - - -	6
Methods - - - - -	8
Uniform Test, Group IV - - - - -	10
Preliminary Group IV - - - - -	26
Uniform Test, Group V - - - - -	34
Preliminary Group V - - - - -	50
Uniform Test, Group VI - - - - -	58
Preliminary Group VI - - - - -	74
Uniform Test, Group VII - - - - -	98
Uniform Test, Group VIII - - - - -	106
Preliminary Group VIII - - - - -	122

Issued February 1971

INTRODUCTION

The program of the U. S. Regional Soybean Laboratory has been directed toward the development of improved strains of soybeans and the obtaining of fundamental information necessary to the efficient breeding of strains to meet specific needs. In the Southern Region, fundamental studies and breeding programs are conducted at three locations, Stoneville, Mississippi; Raleigh, North Carolina; and Gainesville, Florida. After promising new strains are developed at these breeding centers, or by any other cooperating agency, they are advanced to the preliminary and uniform regional tests, conducted in cooperation with the Southeastern States. This testing program enables the breeder to evaluate new strains under a wide variety of conditions, and permits new strains to be put into production in a minimum amount of time.

Ten uniform test groups have been established to evaluate the better strains developed in the breeding programs. The groups 00 through IV are adapted in the northern part of the United States, and the groups IV-S through VIII are grown in the southern part. Within their area of adaptation, there is a maturity range of 12 to 18 days within each maturity class. The best standard varieties available of each maturity class are used as check varieties with which to compare new strains as to seed yield, chemical composition, maturity, height, lodging, seed quality, and reaction to diseases. For the groups grown in the southern area, the major check varieties are: Kent, Hill, Dare, Hood, Lee 68, Bragg, Hampton, and Hardee. At Stoneville, Miss., where all maturity classes will mature, the approximate maturity dates of these varieties, when planted during the first half of May, are: Kent, September 8; Hill, September 20; Dare, October 1; Hood, October 8; Lee, October 16; Bragg, October 22; Hampton, November 1; and Hardee, November 6.

A wide range of soil and climatic conditions exist in the regions. As an aid in recognizing regional adaptation, the region has been subdivided into five rather broad areas which still represent a wide range of soil types. These are: (1) the East Coast, consisting of the Coastal Plain and Tidewater areas of the Eastern Shore of Maryland, Virginia, North Carolina, and the upper half of South Carolina; (2) the Southeast, consisting primarily of the Coastal Plain soils of the Gulf Coast area, but also including similar soil from South Carolina southward; (3) the Upper and Central South, including the Piedmont and loessal hill soils east of the Mississippi River; (4) the Delta area, composed of the alluvial soils along the Mississippi River from southern Missouri, southward; and (5) the Southwest, comprising Arkansas and Louisiana (outside the Delta), and Oklahoma and Texas. In the Southwest area, the potential soybean-growing areas would include the alluvial river valley soils, the gulf coast of Louisiana and Texas, and the high plains of Texas. In this area, several of the tests receive supplemental irrigation. A map is included to illustrate the five production areas.

On nearly all of the soils other than the alluvial soils along the Mississippi River, fertilization is essential for satisfactory soybean production. In the Western area, irrigation is necessary for successful production. A table showing soil types, soil test information, and rate of fertilization is included.

The soil test information is based upon analyses run by laboratories within the states. Different methods are used for extraction and reporting by the various laboratories. An attempt is being made to report phosphorus and potash on a high, medium, and low basis, since pounds per acre may have different meanings in accordance with the methods used. In most cases, soil samples were taken after the soybeans were mature.

STRAIN IDENTIFICATION

The strains designated by number carry a letter prefix. This letter identifies where each strain was selected:

- Co - Coker's Pedigreed Seed Co., Hartsville, South Carolina
- D - Delta Branch Exp. Sta. and U. S. Regional Soybean Laboratory
- F - Florida Agr. Exp. Sta. and U. S. Regional Soybean Laboratory
- Ga - Georgia Agricultural Experiment Station
- L - Illinois Agr. Exp. Sta. and U. S. Regional Soybean Laboratory
- La - Louisiana Agricultural Experiment Station
- Md - Maryland Agr. Exp. Sta. and U. S. Regional Soybean Laboratory
- N - North Carolina Agr. Exp. Sta. and U. S. Regional Soybean Laboratory
- R - Arkansas Agricultural Experiment Station
- S - Missouri Agr. Exp. Sta. and U. S. Regional Soybean Laboratory
- UD - Delaware Agricultural Experiment Station
- V - Virginia Agricultural Experiment Station

* * * * *

* This annual report of activity of the U. S. Regional Soybean *
* Laboratory, as well as that of the state stations with which *
* the Laboratory cooperates, is a progress report and as such *
* may contain statements which may or may not be verified by *
* subsequent experiments. The fact that any statement has been *
* made herein does not necessarily constitute publication. For *
* this reason, citation to particular statements in the report *
* should not be published unless permission has been granted *
* previously by the Laboratory or the State station concerned. *
* * * * *

PRELIMINARY GROUP V

1970

Preliminary Group V nurseries, including 34 experimental strains and the two check varieties Hill and Dare, were grown at seven locations. The parentage of these strains is reported in Table 22. Performance data are summarized in Tables 23 through 28. Differences in seed yield were significant at the 5% level of confidence at five locations. The combined analysis of variance also showed differences among strains to be significant. Thirteen strains produced average seed yields significantly higher than that for Hill. All of these higher yielding strains were 5 to 14 days later in maturity than Hill. There were 18 strains with mean seed yields averaging above that for Dare. The general trend in the group was for maturity to be later than for Hill.

D68-4155 has deciduous pubescence. Seed yield was apparently depressed by leaf hopper attack at Georgetown and Linkwood, as its yield was lower in relation to the check varieties at those two locations in relation to the other locations.

Strains which appear to merit being advanced to Uniform Group V are: V68-381, D68-8, V68-2331, V67-453, and N68-96.

Table 22 - Parentage of the strains in Preliminary Group V, 1970

Variety or strain	Parentage	Generation composited
1. Hill		
2. Dare		
3. D65-3168	Hill x PI 96,983	F7
4. D65-3438	D53-142 x PI 96,983	F7
5. D66-12,392	D63-6100 x Dyer	F5
6. D66-12,394	D63-6100 x Dyer	F5
7. D67-3397	Hill x PI 172,902	F5
8. D68-8	Dyer x Bragg	F5
9. D68-18	Dyer x Bragg	F5
10. D68-47	Dyer x Bragg	F5
11. D68-140	Dyer x Bragg	F5
12. D68-399	Dyer x Pickett	F5
13. D68-4155	D53-697(2) x PI 229,350	F5
14. D68-4291	D53-697(2) x PI 229,350	F5
15. D68-4345	PI 229,350(2) x D53-697	F5
16. D68-4501	D62-6289 x D60-9647	F5
17. D68-4816	D59-693 x D60-9647	F5
18. D68-5018	D59-693 x D60-9647	F5
19. D68-2214	D65-3075 x Hood	F3
20. N68-96	Dare x N60-5234	F4
21. N68-197	Dare x N60-5234	F4
22. N68-383	Dare x N60-5234	F4
23. N68-1685	N55-3643 x Hill	F3
24. N68-1696	N55-3643 x Hill	F3
25. R68-226	R54-171-1 x R64-501	F5
26. R68-296	R54-171-1 x R64-501	F5
27. R68-727	Semmes x R64-500	F5
28. V66-217	S5-7075 x Hill	
29. V67-453	S5-7075 x Hill	
30. V68-183	Lee x S5-7075	
31. V68-224	Lee x S5-7075	
32. V68-273	Lee x S5-7075	
33. V68-297	Lee x S5-7075	
34. V68-381	Lee x S5-7075	
35. V68-461	Lee x S5-7075	
36. V68-2331	York x Clark	

Table 23. - General summary of performance for the strains grown in Preliminary Group V, 1970

Strain	Seed yield	Maturity index	Ht.	Oil	Protein	Seed holding	P.R.	% mottled seed
Hill	34.5	9-26	37	23.7	38.3	1.0	1.0	0
Dare	37.6	+12	37	24.2	38.7	1.8	1.5	0
D65-3168	34.2	+11	37	17.8-	43.3+	1.7	1.0	0
D65-3438	38.9	+10	40	21.5-	39.1	1.3	1.0	0
D66-12,392	36.9	+5	33	22.4-	39.5+	1.6	1.0	0
D66-12,394	39.3+	+5	34	22.0-	38.6	2.3	1.0	0
D67-3397	36.2	+7	33	21.0-	42.3+	2.6	1.0	0
D68-8 ¹	42.4+	+8	41	23.1	40.1+	1.8	1.0	0
D68-18 ¹	38.9	+8	39	23.0	39.9+	2.1	3.0	0
D68-47 ¹	38.7	+11	36	23.8	39.4	1.3	2.0	0
D68-140 ¹	36.0	+6	37	23.5	40.0+	2.0	2.0	0
D68-399 ¹	34.2	+12	35	21.6-	40.4+	1.0	2.0	0
D68-4155	33.3	+8	36	22.4-	38.5	2.9	1.0	0
D68-4291	37.4	+8	38	21.8-	36.4	3.0	1.0	50
D68-4345	34.4	+9	31	18.5-	42.0+	3.7	1.0	25
D68-4501	30.4	+6	33	19.0-	48.2+	2.0	1.0	14
D68-4816	37.1	+9	33	21.4-	42.7+	1.9	1.5	3
D68-5018	36.7	+8	33	21.1-	42.9+	2.1	1.5	14
D68-2214	37.8	+14	40	22.1-	40.8+	2.1	1.0	3
N68-96	40.7+	+10	32	22.3-	41.3+	1.5	1.5	0
N68-197	40.3+	+12	36	22.6-	40.8+	2.0	2.0	0
N68-383	39.2+	+11	35	22.8-	41.0+	1.0	1.5	0
N68-1685	37.1	+12	35	23.2	39.9+	1.0	1.0	0
N68-1696	36.0	+10	37	21.9-	40.2+	1.0	1.0	0
R68-226	39.3+	+13	34	21.4-	41.1+	1.0	1.0	0
R68-296	36.3	+14	43	20.8-	41.4+	1.3	1.0	T
R68-727	37.0	+9	36	22.0-	40.0+	1.2	1.0	13
V66-217	37.9	+7	39	21.9-	39.9+	1.7	1.0	0
V67-453	40.9+	+9	36	22.2-	38.7	2.0	2.0	0
V68-183	39.5+	+8	40	22.8-	39.6+	1.2	3.0	0
V68-224	39.7+	+8	34	22.6-	39.6+	1.0	1.5	0
V68-273	39.5+	+10	33	22.9-	40.8+	2.0	1.0	0
V68-297	40.6+	+11	34	22.7-	41.4+	1.4	1.5	0
V68-381	42.9+	+13	34	22.0-	40.5+	1.1	1.5	0
V68-461	37.4	+12	34	22.2-	41.0+	1.3	1.5	0
V68-2331	41.3+	+4	34	23.0	39.4	1.3	1.5	0
L.S.D.(.05)	4.7			0.8	1.2			
L.S.D.(.01)	6.2			1.1	1.5			

¹Resistant to cyst nematodes and root knot nematodes.

Table 24. - Seed yield, in bushels per acre, for the strains in Preliminary Group V, 1970

Strain	George- town, Del.	Link- wood, Md.	Warsaw, Va.	Plymouth, N.C.	Portage- ville, Mo.	Keiser, Ark.	Stone- ville, Miss.(B)
Hill	34.6	40.5	26.8	40.0	30.3	30.3	39.8
Dare	36.9	44.1	26.6	43.4	36.7	35.6	40.1
D65-3168	33.1	36.1	24.6	41.0	37.2	35.1	32.1
D65-3438	34.1	46.4+	24.6	50.4+	40.8+	42.7+	33.1
D66-12,392	37.5	39.8	24.8	51.9+	37.2	34.0	33.0
D66-12,394	41.0+	41.6	24.4	50.9+	43.5+	35.8	38.2
D67-3397	35.5	42.6	25.4	47.3	35.1	31.0	36.7
D68-8	37.3	45.4	28.1	49.7+	50.3+	43.2+	42.7
D68-18	44.0+	46.5+	27.5	53.1+	54.1+	25.1	21.6
D68-47	36.2	44.6	27.0	47.5	48.2+	35.7	31.4
D68-140	37.5	45.2	27.6	55.0+	35.2	20.8	30.5
D68-399	29.2	37.8	25.8	44.1	42.4+	29.7	30.6
D68-4155	31.4	22.8-	28.4	50.3+	30.0	32.5	37.7
D68-4291	36.2	43.8	24.9	55.8+	35.5	33.2	32.1
D68-4345	33.4	36.9	24.0	50.8+	29.1	30.8	35.7
D68-4501	21.1-	35.4	26.6	42.3	23.6	28.6	35.5
D68-4816	30.9	44.4	31.3	48.7+	34.1	34.3	36.4
D68-5018	37.2	44.1	30.6	46.0	33.9	28.2	36.8
D68-2214	30.0	44.1	27.7	53.6+	31.7	36.0	41.3
N68-96	44.2+	48.3+	30.4	57.9+	29.6	36.7	37.6
N68-197	42.2+	47.5+	26.0	50.8+	39.1	34.1	42.4
N68-383	38.9	43.6	26.8	50.8+	41.4+	35.3	37.7
N68-1685	37.0	39.1	28.6	39.9	38.6	35.7	40.8
N68-1696	28.8	43.1	28.0	46.2	37.9	37.2	30.8
R68-226	42.6+	42.1	26.8	--	28.0	48.1+	38.3
R68-296	31.6	42.7	23.7	43.3	36.7	34.2	41.8
R68-727	32.8	41.1	25.4	47.9+	33.5	36.0	42.3
V66-217	39.1	47.8+	27.9	49.3+	43.4+	23.5	34.6
V67-453	43.4+	46.7+	27.4	48.8+	36.2	41.9+	42.3
V68-183	40.4	53.2+	29.0	50.9+	42.0+	30.1	31.0
V68-224	41.9+	47.5+	27.7	54.4+	30.9	32.2	43.6
V68-273	41.4+	46.7+	29.2	49.2+	32.1	42.4+	35.7
V68-297	41.4+	47.3+	27.3	53.7+	37.6	36.1	40.6
V68-381	38.3	47.8+	28.8	59.5+	42.6+	41.5+	42.3
V68-461	41.0+	49.4+	27.5	49.2+	40.9+	24.8	29.0
V68-2331	41.0+	47.8+	29.4	54.0+	38.9	33.6	44.7
L.S.D. (.05)	6.0	5.6	N.S.	7.7	9.9	10.1	N.S.
C.V.	8%	6%	8%	10%	13%	15%	16%

Table 25. - Oil percentages for the strains in Preliminary Group V, 1970

Strain	Linkwood, Md.	Warsaw, Va.	Plymouth, N.C.	Portageville, Mo.	Keiser, Ark.	Stoneville, Miss.(B)
Hill	24.1	21.8	22.9	23.0	25.7	24.8
Dare	23.8	23.3	24.1	23.7	25.9	24.2
D65-3168	18.3	19.1	17.2	17.4	17.9	16.8
D65-3438	21.2	21.8	21.9	20.7	20.9	22.3
D66-12,392	22.6	21.2	21.8	22.0	23.4	23.1
D66-12,394	23.1	21.1	21.8	21.0	22.1	22.6
D67-3397	21.4	20.2	21.4	20.5	21.6	20.9
D68-8	23.8	23.4	23.3	22.5	22.8	22.8
D68-18	22.9	23.4	22.3	22.0	24.9	22.5
D68-47	23.1	23.3	23.3	23.0	26.4	23.6
D68-140	23.5	22.8	22.3	22.2	26.8	23.3
D68-399	21.7	21.4	21.2	20.9	22.3	22.0
D68-4155	21.9	22.4	23.1	22.3	22.9	21.5
D68-4291	21.6	22.1	21.8	21.2	22.1	22.2
D68-4345	18.3	18.2	19.1	18.1	18.6	18.6
D68-4501	18.7	19.1	19.1	18.3	19.9	18.9
D68-4816	20.9	20.5	21.2	20.9	22.6	22.2
D68-5018	21.2	20.0	20.7	20.0	22.9	21.8
D68-2214	23.1	22.3	21.1	22.3	22.4	21.6
N68-96	21.9	21.8	22.9	21.0	23.4	22.6
N68-197	22.1	22.4	22.4	21.7	23.8	23.1
N68-383	22.8	20.9	23.6	22.5	24.6	22.6
N68-1685	23.6	23.4	23.1	22.8	23.4	23.0
N68-1696	22.1	21.2	22.4	21.0	23.1	21.8
R68-226	21.4	21.2	--	20.5	21.6	22.2
R68-296	21.4	20.9	21.1	20.3	21.0	20.2
R68-727	22.1	21.9	21.9	20.9	23.4	21.6
V66-217	22.1	21.2	21.1	21.2	24.5	21.2
V67-453	22.9	22.1	21.4	20.9	22.8	23.1
V68-183	22.8	22.4	21.9	21.2	24.5	23.8
V68-224	22.8	21.1	21.8	21.4	24.8	23.5
V68-273	23.3	22.4	22.1	23.0	23.9	22.8
V68-297	23.1	21.8	21.9	21.6	24.3	23.5
V68-381	21.4	21.1	22.1	21.2	23.4	22.6
V68-361	21.6	21.6	21.9	21.2	24.1	23.0
V68-2331	22.9	20.3	21.9	23.5	24.5	24.7

Table 26. - Protein percentages for the strains in Preliminary Group V, 1970

Strain	Linkwood, Md.	Warsaw, Va.	Plymouth, N.C.	Portageville, Mo.	Keiser, Ark.	Stoneville, Miss.(B)
Hill	37.7	41.3	39.3	39.7	36.5	35.5
Dare	39.9	40.4	39.4	39.9	36.0	36.5
D65-3168	42.8	43.1	43.3	43.6	42.9	44.0
D65-3438	38.5	38.9	39.7	40.3	38.7	38.4
D66-12,392	38.6	40.1	40.5	40.5	38.6	38.6
D66-12,394	37.8	40.1	40.1	41.1	33.4	39.0
D67-3397	41.1	42.9	43.1	42.5	41.1	42.8
D68-8	38.4	39.9	41.0	40.4	40.7	40.2
D68-18	39.8	38.0	41.4	41.7	38.7	40.0
D68-47	39.0	40.1	40.0	40.3	38.1	38.8
D68-140	39.4	40.4	41.0	42.3	37.6	39.0
D68-399	39.4	42.2	42.1	40.7	38.7	39.4
D68-4155	38.5	39.4	38.7	38.9	37.5	38.4
D68-4291	36.6	36.8	36.3	37.0	35.6	35.8
D68-4345	42.3	42.6	41.8	41.5	40.8	42.8
D68-4501	48.8	46.6	49.1	49.6	45.5	49.4
D68-4816	43.0	43.0	43.6	44.0	42.3	40.1
D68-5018	42.3	44.5	43.6	44.3	40.8	41.6
D68-2214	39.9	41.6	41.4	41.8	38.6	41.5
N68-96	42.1	42.6	41.5	42.8	38.9	39.8
N68-197	41.1	41.7	42.2	42.9	37.1	39.6
N68-383	41.0	43.2	41.9	41.4	38.2	40.5
N68-1685	38.9	40.2	40.6	40.9	38.6	40.2
N68-1696	38.5	41.6	40.6	41.2	38.7	40.5
R68-226	40.2	42.6	--	43.1	39.0	39.6
R68-296	40.6	41.8	42.1	42.4	39.2	42.0
R68-727	39.4	40.6	40.8	40.9	37.5	40.8
V66-217	40.0	41.2	41.7	41.2	35.2	40.0
V67-453	38.7	39.2	40.0	41.1	36.0	37.1
V68-183	40.3	39.7	41.5	42.4	35.9	37.7
V68-224	39.4	39.3	42.5	42.0	36.0	38.1
V68-273	40.6	41.8	42.2	42.2	38.5	39.3
V68-297	41.6	43.0	42.0	43.0	38.9	39.9
V68-381	41.4	41.8	40.9	41.1	38.4	39.6
V68-461	42.0	42.0	42.8	41.9	38.1	38.9
V68-2331	38.2	41.8	40.9	41.0	37.6	36.9

Table 27. - Plant height for the strains in Preliminary Group V, 1970

Strain	George- town, Del.	Link- wood, Md.	Warsaw, Va.	Plymouth, N.C.	Portage- ville, Mo.	Keiser, Ark.	Stone- ville, Miss.(B)
Hill	46	39	35	40	28	33	36
Dare	39	40	38	39	34	32	36
D65-3168	40	39	40	38	35	32	33
D65-3438	49	43	41	39	36	36	34
D66-12,392	39	36	34	34	30	27	28
D66-12,394	39	36	34	35	30	30	31
D67-3397	40	36	34	36	27	25	30
D68-8	47	43	41	47	35	34	37
D68-18	50	40	36	41	36	32	36
D68-47	44	37	36	40	31	30	32
D68-140	46	41	38	43	27	32	35
D68-399	43	35	30	39	34	30	32
D68-4155	38	27	40	48	33	30	35
D68-4291	45	39	39	46	38	30	30
D68-4345	35	33	33	35	27	25	27
D68-4501	37	35	36	36	26	31	30
D68-4816	37	35	34	38	28	29	30
D68-5018	38	36	32	37	28	29	30
D68-2214	45	41	40	43	34	38	36
N68-96	42	34	28	35	24	28	30
N68-197	42	40	37	38	30	30	34
N68-383	44	37	34	38	33	30	31
N68-1685	40	39	36	41	27	33	31
N68-1696	43	41	36	43	33	30	35
R68-226	40	36	40	--	32	28	29
R68-296	55	42	44	46	38	37	36
R68-727	44	37	36	40	34	32	32
V66-217	45	41	38	45	32	33	36
V67-453	43	40	36	39	30	32	32
V68-183	48	44	42	45	34	36	34
V68-224	42	37	34	39	27	32	29
V68-273	38	37	33	35	27	33	25
V68-297	44	38	34	38	24	31	31
V68-381	38	37	34	39	30	29	28
V68-461	43	35	34	41	28	30	29
V68-2331	45	38	34	38	27	28	27

Table 28. - Seed quality scores for the strains in Preliminary Group V, 1970

Strain	George- town, Del.	Link- wood, Md.	Warsaw, Va.	Plymouth, N.C.	Portage- ville, Mo.	Keiser, Ark.	Stone- ville, Miss. (B)
Hill	2.3	2.0	1.4	1.0	3.8	3.5	2.0
Dare	2.3	2.0	1.3	1.0	2.0	3.0	2.0
D65-3168	2.0	2.5	1.6	1.0	3.3	3.0	2.0
D65-3438	2.3	3.0	2.7	1.0	3.8	3.8	2.0
D66-12,392	3.0	3.0	1.6	1.0	4.5	3.8	2.0
D66-12,394	2.5	3.0	1.3	1.0	3.8	3.5	2.0
D67-3397	2.8	3.0	1.5	1.0	3.3	3.3	2.5
D68-8	1.8	2.0	2.4	1.0	2.5	3.3	2.0
D68-18	2.3	3.0	2.4	1.0	2.5	4.0	3.5
D68-47	2.3	3.0	3.1	1.0	3.0	3.0	2.5
D68-140	2.5	3.0	3.0	1.0	5.0	5.0	3.0
D68-399	2.5	2.0	1.7	1.0	3.8	2.8	2.5
D68-4155	2.3	2.0	1.8	1.0	3.3	3.3	2.5
D68-4291	3.0	3.0	3.0	2.0	2.5	5.0	2.5
D68-4345	2.3	3.0	1.7	2.0	2.8	2.8	2.0
D68-4501	3.0	3.0	2.1	1.5	4.8	5.0	2.0
D68-4816	2.3	3.0	2.2	2.0	4.3	4.3	2.0
D68-5018	2.0	2.0	2.5	2.0	3.8	3.5	2.0
D68-2214	2.5	3.0	2.0	1.0	2.3	3.0	3.0
N68-96	2.0	2.0	1.5	1.0	3.0	3.3	2.0
N68-197	2.5	2.0	1.6	1.5	2.8	3.3	2.0
N68-383	2.0	2.0	1.5	1.5	2.3	3.0	2.5
N68-1685	1.5	2.0	1.6	1.0	3.0	2.8	2.0
N68-1696	2.0	2.0	2.0	1.0	3.0	2.5	2.0
R68-226	2.0	2.0	2.2	---	3.5	2.0	2.5
R68-296	2.3	2.0	2.3	1.5	3.5	3.5	2.0
R68-727	2.5	2.0	2.1	1.5	2.3	3.0	2.0
V66-217	1.5	2.0	1.8	1.5	3.5	3.8	2.5
V67-453	2.0	2.0	1.2	1.0	3.0	3.3	2.0
V68-183	1.5	2.0	1.5	1.5	4.0	3.8	2.5
V68-224	2.0	2.0	1.1	1.0	3.5	3.3	2.0
V68-273	2.0	3.0	1.8	1.5	3.3	3.5	2.5
V68-297	2.3	2.0	1.7	2.0	3.3	3.3	2.0
V68-381	1.8	2.0	1.8	1.5	3.0	3.5	2.0
V68-461	2.3	2.0	1.5	1.5	3.0	3.8	2.0
V68-2331	1.5	2.0	1.2	2.0	5.0	4.0	2.0

UNIFORM SOYBEAN TESTS SOUTHERN STATES 1995

**UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
COOPERATING WITH
STATE AGRICULTURAL EXPERIMENT STATIONS
SOUTHERN STATES
STONEVILLE, MISSISSIPPI**

UNIFORM SOYBEAN TESTS**SOUTHERN STATES****1995****COORDINATED BY:**

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INTRODUCTION

The Uniform Soybean Testing Program has been directed toward the testing of elite breeding lines that ultimately leads to the release of varieties. Breeding lines are developed and evaluated in several participating federal and state research programs. As breeding lines demonstrate specific qualities in the individual programs, they are advanced to the preliminary and southern uniform regional tests, conducted in cooperation with research workers in the southern states. This testing program enables breeders to evaluate new strains under a wide variety of conditions, and permits new strains to be put into production in a minimum amount of time.

Eleven uniform test groups have been established to evaluate the best strains developed in the breeding programs. The groups 00 through IV are adapted in the northern part of the United States, and the groups IV-S through VIII are grown in the southern part. Within their area of adaptation, there is a maturity range of 12 to 18 days within each maturity class. The best public varieties available in each maturity class are used as check varieties with which to compare new strains as to seed yield, chemical composition, maturity, height, lodging, seed quality, and reaction to diseases and nematodes. For the groups grown in the southern area, the major check varieties are: Manokin, Delsoy 4710, Hutcheson, Bedford, Brim, TN6-90, Dillon, Stonewall, Haskell, Braxton, Cook, and Maxcy.

A wide range of soil and climatic conditions exists in the regions. As an aid in recognizing regional adaptation, the region has been subdivided into five rather broad areas which still represent a wide range of soil types. These are: (1) the East Coast, consisting of the Coastal Plain and Tidewater areas of the eastern shore of Maryland, Virginia, North Carolina, and the upper half of South Carolina; (2) the Southeast, consisting primarily of the Coastal Plain soils of the Gulf Coast area, but also including similar soil from South Carolina, southward; (3) the Upper and Central South, including the Piedmont and loessial hill soils east of the Mississippi River; (4) the Delta area, composed of the alluvial soils along the Mississippi River from southern Missouri, southward; and (5) the Southwest, comprising Arkansas and Louisiana (outside the Delta), and Oklahoma and Texas. In the Southwest area, the potential soybean-growing areas would include the alluvial soils, and the Gulf Coast of Louisiana and Texas. In this area, several of the tests receive supplemental irrigation.

On nearly all of the soils, other than the alluvial soils along the Mississippi River, fertilization is essential for satisfactory soybean production. The soil test information is based upon analyses run by laboratories with the states. Different methods are used for extraction and reporting by the various laboratories.

STRAIN DESIGNATION

The strains designated by number carry a letter prefix. This letter identifies where each strain was selected:

AU	-	Alabama Agricultural Experiment Station, Auburn
D	-	Delta Branch Experiment Station and USDA-ARS
DMK	-	Delta Branch Experiment Station and USDA-ARS
F	-	Florida Agricultural Experiment Station and USDA-ARS
G	-	Georgia Agricultural Experiment Station
K	-	Kansas Agricultural Experiment Station
KY	-	Kentucky Agricultural Experiment Station
LS	-	Southern Illinois University, Carbondale
MD	-	Maryland Agricultural Experiment Station and USDA-ARS
N	-	North Carolina Agricultural Experiment Station and USDA-ARS
NTCPR	-	North Carolina Agricultural Experiment Station and USDA-ARS
OK	-	Oklahoma Agricultural Experiment Station
R	-	Arkansas Agricultural Experiment Station
RJ	-	Arkansas State University, Jonesboro
S	-	Missouri Agricultural Experiment Station
SC	-	South Carolina Agricultural Experiment Station, Clemson
TN	-	Tennessee Agricultural Experiment Station
TSB	-	Texas Agricultural Experiment Station, Beaumont, Texas
V	-	Virginia Agricultural Experiment Station
VS	-	Virginia Agricultural Experiment Station

METHODS

Cultural Practices

The uniform nurseries were planted in four-row plots with three replications at all locations with the exception of one location which had three-row plots with three replications. The preliminary nurseries were planted similarly with two replications. Row widths at the locations varied from 20 to 40 inches with the majority planted in 30 inch rows. The recommended cultural and management practices were generally followed at each location.

Maturity, Harvest, and Yield

Height in a plot was measured as the average length of plants from the ground to the top extremity at maturity.

Lodging notes were recorded on a scale of 1 to 5 according to the following criteria:

- 1 - almost all plants erect
- 2 - either all plants leaning slightly, or a few plants down
- 3 - either all plants leaning moderately, or 25 to 50% of the plants down
- 4 - either all plants leaning considerably, or 50 to 80% of the plants down
- 5 - all plants down

Maturity was recorded as the date when 95% of the pods had reached mature pod color (Fehr and Caviness, 1977). Maturity in all summaries is expressed as days earlier (-) or later (+) than the reference variety. Reference varieties used in the different maturity groups were as follows: UIVS and PIVS, Manokin; UV and PV, Hutcheson; UVI and PVI, Brim; UVII and PVII, Stonewall; and UVIII and PVIII, Cook.

After end trimming all plots, yields were measured by harvesting the middle row(s) of each plot. Actual seed weights were recorded after the seed of the strains had reached a uniform moisture content. Seed weights were converted to bushels per acre (60 lbs./bu.) by using the appropriate conversion factor for each location with respect to harvested plot size.

Seed quality was rated from 1 to 5 according to the following scale:

- 1 - very good; 2 - good; 3 - fair; 4 - poor; 5 - very poor

Factors considered in estimating seed quality were development of seed, wrinkling damage, and brightness. While the seed quality score indicates relative appearance of seed for strains at one location, considerable differences can exist among factors responsible for the poorer grades at different locations. Seed size for each strain was determined from a composite sample from all replications at a location. Seed size is reported as grams per 100 seed.

Oil and protein percentages were determined from representative locations of the uniform and preliminary tests. A 50-g composite sample of each strain from all replications at a location was sent to the USDA-ARS, National Center for Agricultural Utilization Research at Peoria, Illinois for analysis. Two samples of 18-20 g of seed were analyzed for protein and oil composition with a Model 1255 Infratec NIR food and feed grain analyzer. Analysis of the seed was conducted on an as is basis and then mathematically converted to a moisture-free basis for reporting.

Pest Assessment

Root-knot nematode. Screenings of strains of UIVS - UVIII were conducted in a greenhouse at the University of Georgia.

Three seeds of each genotype were planted in Ray Leach Cone-tainers (20.6 cm long) filled with fumigated sandy loam soil to within 5 cm of the top and then covered with 2.5 cm of fumigated sand. Ten Cone-tainers each of a susceptible and resistant standard cultivar were included in each test. Forty-nine Cone-tainers were placed in a RL-98 tray, filling every other row of the tray. The trays (45) were placed on a greenhouse bench under supplemental light provided by 400-watt metal halide lamps and under an automatic irrigation system. Seven to 10 days after planting, plants were thinned to one seedling per Cone-tainer and inoculated with 3000 root-knot nematode eggs collected with 0.5% NaOCL (10% Clorox). The inoculum (3-5 ml depending on egg concentration) was placed with a digital dispensing pump in a soil at a depth of 2-3 cm. Plants were watered manually for 1-2 days following inoculation before turning on the automatic irrigation system. All plants were fertilized weekly with 20-20-20 (N = 20%, P = 8.7%, K = 16.6%) fertilizer solution.

Thirty days after inoculation, roots of two of the standard check plants were examined for galls to assess whether to begin the process of evaluating the entire test. For evaluation, shoots were excised and root systems removed from the Cone-tainers and washed free of soil. For screening advanced breeding lines, the total number of galls per root system was counted. For all other studies, the number of galls on the remainder of the susceptible and resistant check plants was used to develop a gall index for evaluating the genotypes. The gall indexes (based on the number of galls/plant) were as follows: *Meloidogyne incognita* - 1:0-8, 2:9-16, 3:17-24; 4:25-32; and 5:33+; *M. arenaria* - 1:0-10; 2:11-20; 3:21-30; 4:31-40; and 5:41+.

Screenings for strains of UIVS-UVIII and PIVS-PVIII were conducted in a greenhouse at the USDA-ARS Nematology Investigations at Jackson, Tennessee.

Seven seed of each genotype was planted in each of three pots filled with sterilized sandy loam soil. Approximately 3,000 eggs of the nematode was added to the potted soil just prior to planting. Plants were evaluated for amount of root galling at six weeks after planting. The ratings for galling were as follows:

- 1 = <10% of root system with small galls,
- 2 = 10-25% of root system galled with mostly small galls,
- 3 = 26-50% of root system galled with several large galls,
- 4 = 51-90% of root system galled with mostly large galls, and
- 5 = 91-100% of root system galled with large galls and some root rot.

The mean rating reported for each strain was calculated as follows:

$$\text{Mean rating} = \frac{\sum (\text{Rating category} \times \# \text{ plants receiving rating})}{\text{Total \# of plants}}$$

The isolates of *M. incognita* race 4 and *M. arenaria* race 2 were obtained from Dr. Gary Windham, USDA-ARS, Mississippi State, MS. The isolates of the nematodes used were different than those used by Dr. Roger Boerma at the University of Georgia.

Soybean cyst nematode. The SCN race 3 and 14 ratings reported for UIVS - UVIII were based on screenings made at Jackson, Tennessee. For the screening, seed of each strain was planted in sterile soil at a rate of one per pot for a total of seven pots per strain. At the time of planting, 1000 eggs of the race being evaluated were added to each pot. Approximately four weeks after planting, plants were rated based on the number of female cysts on the roots. The ratings were as follows:

- 1 = 0-5 female cysts on the roots,
- 2 = 6-10 female cysts on the roots,
- 3 = 11-20 female cysts on the roots,
- 4 = 21-40 female cysts on the roots,
- 5 = > 40 female cysts on the roots.

The mean rating reported for each strain was calculated the same formula that was used to calculate the root-knot nematode mean ratings.

Stem Canker

Mississippi. Strains from UIVS-UVIII and PIVS-PV were evaluated at the Delta Research and Extension Center, Stoneville, Mississippi. Strains were planted in single-row plots 1.8 m long in a Boskett fine sandy loam in a randomized complete block design with four replications. A susceptible line (J77-339) was planted every ten plots. Inoculum was produced by aseptically culturing isolate 90-46 of the fungus on autoclaved toothpicks. Twelve plants per plot were inoculated by forcing a toothpick through the stem in the upper one-third of the plant. Stem canker lesion development was rated after the susceptible check had been killed by the disease.

Strains were assigned a rating based on the mean of four replications using the following scale:

- 1 = resistant (no lesion)
- 2 = moderately resistant (lesion 0-5cm)
- 3 = intermediate reaction (lesion 5-10 cm)
- 4 = moderately susceptible (lesion 10-25 cm)
- 5 = susceptible (lesion > 25 cm)
- 6 = very susceptible (plants dead)

Sudden death syndrome. Soybean sudden death syndrome (SDS) was evaluated for UIVS and UV at Ullin and Ridgeway, Illinois, in three replications of four-row plots 24 foot long.

Trials were planted 23 May 1995. Percent of plants with visible leaf symptoms were scored weekly during pod fill, and interpolated to the R6 developmental stage (full seed stage). Disease incidence is reported.

Velvetbean Caterpillar. Strains from UVI-UVIII were evaluated at Quincy, FL. Lines were scored 1 = no defoliation to 10 = severe defoliation.

Statistical Analyses

Yield data for each test at each location were analyzed by analysis of variance or nearest neighbors analysis (Athens, GA; Plains, GA; and all Kansas locations) to obtain the coefficient of variability (C.V.) and LSD ($P = 0.05$) for that location. Locations with extremely low yields or extremely high C.V.'s were not included in the combined analysis or in calculating the means across locations. The yield was then analyzed across all locations within a maturity group by analysis of variance. The means of the various traits were calculated at the same time and are reported in this publication.

UNIFORM GROUP VI
1995

Uniform Group VI nurseries were planted at 26 locations. Data were obtained from 23 of these locations. The parentage for each strain is reported in Table 35. Table 36 gives a general summary of information for each strain including one, two, and three-year means for seed yield, oil and protein percentages, botanical traits, and pest reactions. Results from individual locations are summarized in Tables 37 - 42.

TABLE 35 - PARENTAGE OF STRAIN/VARIETY GROWN IN UNIFORM GROUP VI, 1995.

STRAIN/ VARIETY	PARENTAGE			GENERATION COMPOSITED
1. BRIM	YOUNG	X	N77-1102	F7
2. DILLON	CENTENNIAL	X	YOUNG	F5
3. AU90-442	HUTCHESON	X	AU82-589	F6
4. AU90-585	HUTCHESON	X	AU82-589	F6
5. G89-300	HUTCHESON	X	COLQUITT	F7
6. G89-2223	G81-152	X	COKER 6738	F7
7. N90-541	HUTCHESON	X	N80-1014	F6
8. N91-386	N85-4085	X	BRAXTON	F6
9. SC89-181	HUTCHESON	X	LEFLORE	F5
10. SC90-2089	COKER 6847	X	HUTCHESON	F5
11. AU91-158	G83-198	X	N85-492	F6
12. AU91-1371	AU82-211	X	AU82-589	F6
13. D92-4216	LYON	X	D86-3429	F5
14. N92-598	N85-492	X	N84-507	F6
15. N92-612	N85-492	X	PI 438302B	F6
16. NTCPR92-40	NAKESENNARI	X	YOUNG	F4
17. R91-4484	R85-336	X	WALTERS	F5
18. SC91-2007	NK'S S83-30	X	HUTCHESON	F5
19. V88-494	V79-881	X	TOANO	F5

TABLE 36 - GENERAL SUMMARY OF PERFORMANCE FOR STRAIN/VARIETY GROWN IN UNIFORM GROUP VI, 1995.

STRAIN/ VARIETY	YIELD			PROTEIN			OIL		
	1995	94-95	93-95	1995	94-95	93-95	1995	94-95	93-95
1. BRIM	41.2	44.0	42.4	42.9	43.4	42.7	20.2	20.2	20.2
2. DILLON	41.7	.	.	42.4	.	.	20.7	.	.
3. AU90-442	35.0	41.2	.	41.6	42.0	.	20.6	20.8	.
4. AU90-585	42.4	44.9	.	42.0	42.6	.	20.5	20.4	.
5. G89-300	41.5	43.8	.	40.1	40.7	.	20.9	20.7	.
6. G89-2223	42.2	45.1	.	42.6	43.2	.	21.0	20.9	.
7. N90-541	40.2	44.5	42.1	41.9	42.4	41.7	22.1	22.0	22.4
8. N91-386	37.4	41.7	.	43.4	43.6	.	19.7	19.8	.
9. SC89-181	40.1	42.2	42.1	41.1	41.7	41.1	20.0	20.0	20.1
10. SC90-2089	43.4	45.0	.	43.3	43.8	.	19.9	19.9	.
11. AU91-158	41.3	.	.	41.5	.	.	20.6	.	.
12. AU91-1371	40.4	.	.	41.2	.	.	19.9	.	.
13. D92-4216	36.3	.	.	43.7	.	.	19.6	.	.
14. N92-598	41.0	.	.	40.5	.	.	21.8	.	.
15. N92-612	37.4	.	.	39.6	.	.	21.3	.	.
16. NTCPR92-40	35.7	.	.	42.3	.	.	20.7	.	.
17. R91-4484	39.2	.	.	43.2	.	.	20.5	.	.
18. SC91-2007	42.2	.	.	42.3	.	.	20.9	.	.
19. V88-494	41.8	44.3	42.9	42.5	42.8	42.0	20.7	20.6	20.8

BOTANICAL TRAITS

STRAIN/ VARIETY	FL.	MAT.	LODGING	HEIGHT	SEED QUALITY	SEED SIZE	PUB.	POD
	COLOR	DATE					COLOR	COLOR
1. BRIM	W	0	2.0	33	1.5	12.3	G	BR
2. DILLON	P	-4	1.7	32	1.6	14.0	G	T
3. AU90-442	P	6	2.3	33	1.8	11.8	T	T
4. AU90-585	P	1	2.3	31	1.7	12.0	G	T
5. G89-300	P	3	1.7	32	1.6	14.7	T	T
6. G89-2223	W	0	2.2	29	1.5	12.8	T	T
7. N90-541	W	-6	1.2	26	1.9	13.8	T	T
8. N91-386	P	2	2.0	35	1.6	18.7	T	T
9. SC89-181	W	3	2.1	32	1.6	11.5	G	T
10. SC90-2089	W	3	2.0	31	1.7	12.6	G	T
11. AU91-158	P	-1	2.1	30	1.7	13.3	T	T
12. AU91-1371	P	3	1.9	31	1.6	12.1	G	T
13. D92-4216	W	3	2.9	31	1.7	13.4	G	T
14. N92-598	P	-3	1.5	27	2.2	15.5	G	BR
15. N92-612	P	-5	1.5	28	2.2	14.9	G	T
16. NTCPR92-40	P	-2	2.3	33	2.0	19.2	G	T
17. R91-4484	P	-7	1.6	26	2.0	15.0	T	BR
18. SC91-2007	W	6	2.1	36	1.5	13.4	G	T
19. V88-494	P	2	1.6	29	1.7	13.0	G	T

TABLE 36 - (Continued).

STRAIN/ VARIETY	PEST REACTIONS							
	STEM	M.a. GA	M.a. TN	M.i. GA	M.i. TN	SCN 3	SCN 14	VBC
	CANKER MS							
1. BRIM	4.5	4.0	4.0	3.5	1.2	4.7	4.7	7.0
2. DILLON	2.6	5.0	1.2	1.5	1.0	5.0	4.4	5.0
3. AU90-442	5.0	3.3	1.2	1.3	1.0	5.0	4.0	5.3
4. AU90-585	1.0	4.3	2.2	1.3	1.3	5.0	4.8	6.5
5. G89-300	1.0	4.3	1.3	1.5	1.0	4.7	4.4	5.7
6. G89-2223	1.0	2.3	1.0	1.3	1.0	1.0	4.2	6.7
7. N90-541	1.6	3.8	3.8	3.3	1.8	4.7	4.7	8.0
8. N91-386	1.0	3.8	1.3	1.5	1.3	4.9	4.3	4.8
9. SC89-181	1.0	4.0	1.3	1.0	1.0	1.1	1.2	8.0
10. SC90-2089	1.0	2.8	1.0	1.8	1.0	1.1	3.8	7.8
11. AU91-158	4.0	2.8	3.0	3.8	1.1	1.6	3.0	7.2
12. AU91-1371	1.5	4.3	3.8	4.3	2.7	1.0	2.4	4.5
13. D92-4216	1.1	3.3	1.7	2.0	2.0	3.0	1.5	5.2
14. N92-598	4.5	4.0	3.8	3.0	2.2	4.7	1.3	5.2
15. N92-612	4.9	3.0	2.4	2.3	1.1	5.0	1.2	5.5
16. NTCPR92-40	5.0	4.8	4.0	5.0	2.0	4.9	2.2	7.5
17. R91-4484	4.4	3.8	4.5	5.0	3.8	1.1	2.8	8.3
18. SC91-2007	1.0	3.3	1.2	3.3	1.0	1.4	4.2	7.3
19. V88-494	1.0	3.8	3.8	4.0	2.3	4.6	3.8	6.3



The Georgia Agricultural Experiment Stations
College of Agricultural and Environmental Sciences
The University of Georgia

9700396

APPENDIX III
Research Report
Number 648
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1997 Field Crops Performance Tests: **Soybean, Peanut, Cotton, Tobacco, Sorghum, Grain Millet, and Summer Annual Forages**

*Paul L. Raymer, J. LaDon Day, Anton E. Coy, Shelby H. Baker,
William D. Branch, and Stevan S. LaHue, Editors*



Tifton, Georgia:
Early-Planted Soybean Variety Performance, 1997, 9700396
Irrigated (Continued)

Company or Brand Name	Variety	Yield ¹ bu/acre	Bloom date	Maturity date	Plant Height in	Lodging ² rating	Weight of 100 Seed gm	Seed Quality ³ rating	Shattering ⁴ rating
<u>Maturity Group VI</u>									
Hartz	H6191	53.1	07/08	10/18	28	1.0	14.5	3.0	1.0
Deltapine	DP 3681	52.1	07/11	10/12	38	1.0	16.3	3.0	1.0
Public Variety	Musen	51.3	07/14	10/14	35	1.0	14.3	3.0	1.0
SGA	Boggs	50.2	07/12	10/10	35	1.0	16.5	3.7	1.0
Public Variety	Bryan	49.8	07/11	10/15	40	1.0	15.3	3.0	1.0
Pioneer	9692	49.6	07/10	10/13	31	1.0	15.8	3.7	1.0
Dyna-Gro	3682	48.5	07/08	10/14	38	1.0	18.1	3.3	1.0
Asgrow	A6711	48.3	07/06	10/05	31	1.0	15.8	4.3	1.0
NK	S62-62	47.6	07/07	10/01	24	1.0	16.5	5.0	1.0
Terra-Riverside	678	44.4	07/10	10/13	35	1.0	15.3	3.3	1.0
Univ of Ga	G91-291	44.1	07/14	10/14	39	1.0	16.2	4.0	1.0
HyPerformer	HY 663	41.5	07/10	10/14	36	1.0	17.7	4.0	1.0
NK	S65-50	41.2	07/10	09/30	31	1.0	15.4	5.0	1.0
Deltapine	DP 726	41.2	07/13	10/14	38	1.0	14.9	3.0	1.0
Public Variety	TN 6-90	40.4	07/13	09/30	37	1.0	15.2	4.3	1.0
Hartz	H6373	40.2	07/10	10/16	35	1.0	17.2	4.3	1.0
Hartz	H6255	39.7	07/11	10/15	37	1.0	15.3	4.0	1.0
Deltapine	DP 3640	36.8	07/13	10/03	40	1.0	14.8	4.7	1.0
NK	S60-E4	36.6	07/05	09/25	30	1.0	14.3	5.0	1.0
Public Variety	Brim	33.3	07/08	10/06	34	1.0	13.6	4.0	1.0
Public Variety	Dillon	33.3	07/11	10/01	30	1.0	15.1	4.3	1.0
Pioneer	9631	33.2	07/13	10/01	35	1.0	14.0	4.7	1.0
Terra-Riverside	RVS 699	32.1	07/09	10/15	29	1.0	16.4	4.0	1.0
Hartz	H6104	31.7	07/08	09/28	30	1.0	14.4	5.0	1.0
Public Variety	Hutcheson	29.4	07/04	09/19	25	1.0	15.8	5.0	1.0
Public Variety	Young	27.1	07/12	10/03	37	1.0	14.1	4.3	1.0
Average		41.4 ⁷	07/10	10/07	34	1.0	15.5	4.1	1.0
LSD at 10% Level		6.0	02	04	7	-	-	0.5	-
Std. Err. of Entry Mean		2.5	01	02	3	-	-	0.2	-

Tifton, Georgia:
Early-Planted Soybean Variety Performance, 1997, 9700396
Irrigated (Continued)

1. Yields calculated at 13% moisture.
2. Lodging rating: Rated 1 (all plants erect) to 5 (over 80% of plants down).
3. Seed quality rating: Rated 1 (very good) to 5 (very poor).
4. Shattering rating: Rated 1 (no shattering) to 5 (>50% pods shattered).
5. CV = 8.3% and df for EMS = 29.
6. The F-test indicated no statistical differences at the $\alpha = .10$ probability level; therefore, an LSD value was not calculated.
7. CV = 10.6% and df for EMS = 49.
8. CV = 11.8% and df for EMS = 51.

Bolding within each test denotes entries with yields equal to the highest yielding entry based on Fisher's protected LSD ($P = 0.10$).

Planted: May 16, 1997.

Harvested: Maturity Group V - October 9, 1997.
 Maturity Group VI - December 19, 1997.
 Maturity Groups VII & VIII - December 19, 1997.

Seeding Rate: Eight viable seeds per foot in 30" rows.

Soil Type: Tifton loamy sand.

Soil Test: P = High, K = Medium, pH = 6.6.

Fertilization: Preplant: 15 lb N, 45 lb P_2O_5 , and 90 lb K_2O /acre.

Previous Crop: Corn.

Management: Moldboard plowed, bedded, subsoiled and rototilled; Treflan, Basagran, Poast and two cultivations used for weed control; Diazon, Dipel and Dimilin used for insect control; irrigation 8.0 inches.

Test conducted by A. E. Coy and M. Pippin.

RECEIVED

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) South Carolina Agriculture and Forestry Research System	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER SC89-181	3. VARIETY NAME Musen
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 104 Barre Hall Clemson University Clemson, SC 29634-0351	5. TELEPHONE (include area code) 864-656-3140	6. FAX (include area code) 864-656-3779
7. PVPO NUMBER 9700396		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.

☒ YES☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company?

If no, give name of country _____

☒ YES☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES☐ NO

If no, give name of country _____

b. If original rights to variety were owned by a company, is the original owner(s) a U.S. based company?

☐ YES☐ NO

If no, give name of country _____

11. Additional explanation on ownership (If needed, use reverse for extra space):

SC89-181 MUSEN Soybean was originated and developed by Dr. Emerson R. Shipe, a plant breeder employed by Clemson University/South Carolina Agriculture and Forestry Research System. By agreement between employee and Clemson University, all rights to any invention, discovery, or development made by an employee are assigned to the University. No rights to such invention, discovery, or development are retained by the employee.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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